Bronchiectasis: A Sign of Chronic Graft-Versus-Host Disease after Allogeneic Bone Marrow Transplantation

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Abstract

A 19-year-old man is reported who had underwent bone marrow transplantation (BMT) for acute myelogenous leukemia developed respiratory complaints of productive cough and progressive dyspnea at post-transplant day 278 and was hospitalised. Chest-x-ray and high resolution computed tomogaphy (HRCT) revealed cylindirical bronchiectasis. Pathologic examination of transbronchial biopsy was consistent with chronic graft-versus-host disease (CGVHD). The patient had no history of respiratory disease or any other condition that could cause bronchiectasis other than CGVHD. Bronchiectasis can be considered as an early predictor of CGVHD and its early diagnosis by HRCT in suspicion of GVHD after BMT may lead to early re-evaluation of treatment.

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Key words: *Chronic graft-versus-host disease, Bronchiectasis, Allogeneic bone marrow transplantation, High resolution computed tomography*

Introduction

Allogeneic bone marrow transplantation (BMT) is performed as a part of treatment for a variety of fatal hematologic and immunologic disorders. Pulmonary complications are a common cause of serious morbidity and mortality after allogeneic BMT(1). Pulmonary graft versus host disease (GVHD) may manifest as diffuse alveoler damage, lymphocytic interstitial pneumonitis, lymphocytic bronchitis, and bronchiolitis(2). After BMT, if airflow obstruction occurs, usually represents bronchiolitis obliterans and occurs in approximately 10 % of patients with chronic GVHD(3). But bronchiectasis, although described as a sign of chronic rejection after heart or heart-lung transplantation, has rarely been reported after BMT(4-8). We report a case of bronchiectasis, as a manifestation of CGVHD after allogeneic BMT.

Case

A 19-year-old man was admitted for dyspnea and productive cough whose past history was significant for allogeneic BMT for acute myelogenous leukemia type VI at post-transplant day 278 and was hospitalised. The course was complicated by CGVHD with gastrointestinal involvement, which was pathologically diagnosed at post-transplant day 116. Evaluation before BMT was negative for pulmonary disease roentgenologically,

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clinically and spirometrically. Chest X-ray and HRCT revealed cylindirical bronchiectasis (figure 1 and 2). Spirometric studies demonstrated combined restrictive and obstructive pattern with FEV1 of 2.94 L (66% predicted), FVC of 3.86 L (74% predicted), FEV1/FVC :76 % predicted, and no response to bronchodilator. Sweat chloride level, immunoglobulin A, G, M levels, alpha-1- antitripsin level, and paranasal sinus CT were done in evaluation for bronchiectasis and the results were in normal limits. Bronchoscopy with transbronchial biopsy revealed lymphocytic infiltration in the alveolar wall and airway epithelium that was consistent with CGVHD. Corticosteroids yielded a marked decrease in symptoms , and improvement in pulmonary function tests ; FEV1 of 3.40 L (77% predicted), FVC of 4.30 L (82 % predicted) and FEV1/ FVC of 0.79 .

Discussion

The case presented is of significance because of bronchiectasis , although was described as a sign of chronic rejection after heart or heart-lung transplantation , which is a rare manifestation of CGVHD after allogeneic BMT(6-8).

GVHD may present as acute or chronic pulmonary disease, and occurs mostly after allogeneic BMT, rather than autologous BMT. Pulmonary GVHD may manifest as diffuse alveoler damage, lymphocytic bronchitis, lymphocytic interstitial pneumonitis, and bronchiolitis(2). Lymphocytic bronchitis is characterised by focal epithelial necrosis, reperative epithelial hyperplasia, and lymphoplasmacytic infiltration of the mucosa and submucosa. The airway infiltrates may be associated with varying degrees of interstitial lymphocytic pneumonitis. Clinical symptoms are nonspecific, with subacute onset of a dry nonproductive cough and dyspnea, often associated with evidence of GVHD in the skin, intestine, and liver. Chest X-ray may be normal or may show mild hyperinflation or bilateral interstitial infiltrates. Pathologic examination of transbronchial biopsy of our case was consistent with GVHD without bronchiolar involvement.

The patient had no history of childhood infections such as measles, pertussis or tuberculosis, and no family history of cystic fibrosis, alpha-1-antitripsin enzyme deficiency, or any other immunodeficiency state and also no roentgenologic findings of bronchiectasis, or any other respiratory illness at pretransplant period to be able to cause bronchiectasis(9). We evaluated the patient for alpha-1-antitripsin deficiency and cystic fibrosis and also for immunodeficiency states that can explain bronchiectasis at an early age but the results were normal. Also at posttransplantation period, we could not find any factor or event for pathogenesis of bronchiectasis other than CGVHD. Morehead RS reported two cases of bronchiectasis after allogeneic BMT and concluded that etiology of bronchiectasis was CGVHD although one patient had coexistent sinusitis that has a potential to seed the lower respiratory tract. In our case, paranasal sinus CT was normal, excluding sinusitis. Philit F and et al described four BMT patients, two of them had biopsy proven bronchiolitis obliterans with CGVHD and obstructive lung disease who had bronchiectasis on the HRCT scan. However, there were no findings of bronchiolitis obliterans roentgenologically and pathologically in our case.

In conclusion, bronchiectasis may be among manifestations of CGVHD after bone marrow transplantation. Since HRCT is the technique of choice for patients with suspected bronchiectasis, it should be performed if there is suspicion of CGVHD after BMT for re-modulating immunosuppression treatment without delay.

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